

## **Subject: Petition for Exemptions from certain provisions of 14 CFR § 91, AW609**

### **Introduction**

AgustaWestland Philadelphia Corporation (AWPC) is a wholly owned subsidiary of Leonardo Helicopter Division, whose core focus is the production of helicopters and tiltrotors

From 2022 AWPC will be conducting acceptance test flights, maintenance test flights, and aircraft delivery flights of the AW609 tiltrotor.

The AW609 tiltrotor is a vertical take-off and landing (VTOL<sup>1</sup>) aircraft manufactured by AgustaWestland Philadelphia Corporation (AWPC). The AW609 is capable of climbing to a mid-level altitude and cruise as an airplane at turboprop-like airspeeds and ranges. The AW609 has a Maximum Takeoff Weight of 18,000 pounds which would be classified as a large (>12,500 pound) aircraft. The AW609 tiltrotor aircraft is capable of Transport Category Performance. The AW609 will operate in the IFR environment and can operate at approach airspeeds less than 91 knots (Approach Category A)<sup>2</sup> The minimum crew for all flight conditions is two pilots.

Per the FAA AW609 G-1 Issue Paper<sup>3</sup>: AW609 Certification Basis (Project TC3491RC-R), § TR.1 *Applicability*<sup>4</sup>, AWPC and the Federal Aviation Administration (FAA) have agreed that the

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<sup>1</sup> Aeronautical Information Manual, U.S. Department of Transportation, Federal Aviation Administration with Change 1, May 26, 2016

<sup>2</sup> 14 CFR § 97.3

Symbols and terms used in procedures.

[As used in the standard instrument procedures prescribed in this part--

Aircraft approach category means a grouping of aircraft based on a speed of VREF, if specified, or if VREF is not specified, 1.3 Vso at the maximum certificated landing weight. VREF, Vso, and the maximum certificated landing weight are those values as established for the aircraft by the certification authority

of the country of registry. The categories are as follows--

(1) Category A: Speed less than 91 knots.

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<sup>3</sup> The G-1 Issue Paper is the codification of the aircraft Certification Basis per FAA Advisory Circular 20-166 4. d.; dated 15 June 2010

<sup>4</sup> The FAA G-1 Issue Paper Stage 2, AW609 Certification Basis; dated June 6, 2016: AW609 Certification Basis, **Subpart A – General, § TR 1 Applicability** includes a new Section reference “TR” which is either a new requirement or a edited/modified paragraph from 14 CFR parts 23/25/29; and,

(c) Terms used throughout Certification Basis shall be interpreted as follows:

“Rotorcraft”, “Category A rotorcraft” means “tiltrotor aircraft”.

“Airplane” means “tiltrotor aircraft”.

“Aileron”, “flap” means “flaperon”.

“Rudder” means “directional control”.

“Rotor, propeller” means “propotor”.

AW609 “ . . . [c]ertification basis was written to reflect transport category requirements.” The AW609 qualifies under the special class of aircraft definition per FAA Part 21.17(b) for defining the certification basis.

The AW609 certification basis originates from CFR 14 Subchapter C requirements of Part 29, Part 25, and Part 23, and new Tiltrotor requirements. The new Tiltrotor requirements (§ TR.XX) consist of a combination of the 14 CFR Parts 29/25/23; modified 29/25/23 CFR 14 Parts; or entirely new requirements deemed necessary to provide an appropriate level of safety for the AW609. The majority of the new Tiltrotor requirements were in the Subparts B (Flight) & G (Operating Limitations) and Appendix H (Normal Category Performance). AWPC expects to receive its AW609 Type Certificate in 2022. Type rating in the AW609 will be granted via an FAA approved Part 142 training program on a Level D full flight simulator in Philadelphia.

As far back as 1997, the FAA began preparing regulations to accommodate aircraft capable of these types of operations. The FAA has published a Final Rule<sup>5</sup> to establish the Tiltrotor Class (Part 21.93 (b) (5)) and the applicable Tiltrotor Noise Standards (Part 36, Appendix K). As defined in Part 36, a tiltrotor “means a class of aircraft capable of vertical take-off and landing, within the powered-lift category, with rotors mounted at or near the wing tips that vary in pitch from near vertical to near horizontal configuration relative to the wing and fuselage.” Current Part 91 regulations have not established rules which address the characteristics of powered lift aircraft in general, and tiltrotors specifically. By the strictest interpretation of aviation laws, the AW609 is an aircraft, but it is neither a helicopter nor an airplane. The silence of Part 91 General Operating and Flight Rules with regards to tiltrotor aircraft poses a flight safety risk that must be addressed to foster consistent application of operational regulations.

**Information required by 14 CFR § 11.81**

**(a) Name:**

AgustaWestland Philadelphia Corporation  
Attention: Peter Scheidler  
3050 Red Lion Road  
Philadelphia, PA 19114  
[Peter.Scheidler@leonardocompany.us](mailto:Peter.Scheidler@leonardocompany.us)

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<sup>5</sup> Ibid. 1

**(b) Section of 14 CFR from which Exemption is Requested**

This petition is filed to provide the regulator with a holistic picture of AW609 operations. The vast majority of Part 91 has not been amended or updated since the codification of the term “powered-lift” in 14 CFR Part 1 in 1997. Regulations written before the term powered-lift became codified into the FAR are not inclusive of these aircraft. The FAA recognized powered-lift's absence in Part 91, when it amended 91.1001 and 91.1053 in 2003 to incorporate the term. AWPC recognizes and understands the need for rule change in order to incorporate new and novel aircraft types. In the interim, AWPC seeks confirmation from FAA that where the term “aircraft” is used, that the rule applies to AW609 and that the most conservative approach applies. In the few cases where the rule makes distinctions between *Airplanes and Rotorcraft* or *Airplanes and Helicopters*, then AW609’s capabilities are more closely aligned with the Rotorcraft-Helicopter category and that AW609 operators follow the rule as it pertains to Rotorcraft and/or Helicopters. This interpretation applies to the following rules:

- §91.9 Civil aircraft flight manual, marking, and placard requirements.
- §91.113 Right-of-way rules: Except water operations.
- §91.126 Operating on or in the vicinity of an airport in Class G airspace.
- §91.129 Operations in Class D airspace.
- §91.146 Passenger-carrying flights for the benefit of a charitable, nonprofit, or community event.
- §91.147 Passenger carrying flights for compensation or hire.
- §91.151 Fuel requirements for flight in VFR conditions.

This petition seeks exemption from the non-helicopter requirements of the following rules:

- §91.167 Fuel requirements for flight in IFR conditions.
- §91.175 Takeoff and landing under IFR.

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*§91.9 Civil aircraft flight manual, marking, and placard requirements.*

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(d) Any person taking off or landing a helicopter certificated under part 29 of this chapter at a heliport constructed over water may make such momentary flight as is necessary for takeoff or

landing through the prohibited range of the limiting height-speed envelope established for the helicopter if that flight through the prohibited range takes place over water on which a safe ditching can be accomplished and if the helicopter is amphibious or is equipped with floats or other emergency flotation gear adequate to accomplish a safe emergency ditching on open water.

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*§91.113 Right-of-way rules: Except water operations.*

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...

(d) Converging. When aircraft of the same category are converging at approximately the same altitude (except head-on, or nearly so), the aircraft to the other's right has the right-of-way. If the aircraft are of different categories—

- (1) A balloon has the right-of-way over any other category of aircraft;
- (2) A glider has the right-of-way over an airship, powered parachute, weight-shift-control aircraft, airplane, or rotorcraft.
- (3) An airship has the right-of-way over a powered parachute, weight-shift-control aircraft, airplane, or rotorcraft.

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*§91.126 Operating on or in the vicinity of an airport in Class G airspace.*

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- (1) Each pilot of an airplane must make all turns of that airplane to the left unless the airport displays approved light signals or visual markings indicating that turns should be made to the right, in which case the pilot must make all turns to the right; and
- (2) Each pilot of a helicopter or a powered parachute must avoid the flow of fixed-wing aircraft.

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*§91.129 Operations in Class D airspace.*

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...

(f) Approaches. Except when conducting a circling approach under part 97 of this chapter or unless otherwise required by ATC, each pilot must—

- (1) Circle the airport to the left, if operating an airplane; or
- (2) Avoid the flow of fixed-wing aircraft, if operating a helicopter.

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*§91.146 Passenger-carrying flights for the benefit of a charitable, nonprofit, or community event.*

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(b) Passenger carrying flights for the benefit of a charitable, nonprofit, or community event identified in paragraph (c) of this section are not subject to the certification requirements of part 119 or the drug and alcohol testing requirements in part 120 of this chapter, provided the following conditions are satisfied and the limitations in paragraphs (c) and (d) are not exceeded:

- (1) The flight is nonstop and begins and ends at the same airport and is conducted within a 25-statute mile radius of that airport;
- (2) The flight is conducted from a public airport that is adequate for the airplane or helicopter used, or from another location the FAA approves for the operation;
- (3) The airplane or helicopter has a maximum of 30 seats, excluding each crewmember seat, and a maximum payload capacity of 7,500 pounds;
- (5) Each airplane or helicopter holds a standard airworthiness certificate, is airworthy, and is operated in compliance with the applicable requirements of subpart E of this part;
- (6) Each flight is made during day VFR conditions;
- (7) Reimbursement of the operator of the airplane or helicopter is limited to that portion of the passenger payment for the flight that does not exceed the pro rata cost of owning, operating,

and maintaining the aircraft for that flight, which may include fuel, oil, airport expenditures, and rental fees;

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*§91.147 Passenger carrying flights for compensation or hire.*

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(a) For the purposes of this section and for drug and alcohol testing, Operator means any person conducting nonstop passenger-carrying flights in an airplane or helicopter for compensation or hire in accordance with §§119.1(e)(2), 135.1(a)(5), or 121.1(d), of this chapter that begin and end at the same airport and are conducted within a 25-statute mile radius of that airport.

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*§91.151 Fuel requirements for flight in VFR conditions.*

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(a) No person may begin a flight in an airplane under VFR conditions unless (considering wind and forecast weather conditions) there is enough fuel to fly to the first point of intended landing and, assuming normal cruising speed—

- (1) During the day, to fly after that for at least 30 minutes; or
- (2) At night, to fly after that for at least 45 minutes.

(b) No person may begin a flight in a rotorcraft under VFR conditions unless (considering wind and forecast weather conditions) there is enough fuel to fly to the first point of intended landing and, assuming normal cruising speed, to fly after that for at least 20 minutes.

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*§91.167 Fuel requirements for flight in IFR conditions.*

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(a) No person may operate a civil aircraft in IFR conditions unless it carries enough fuel considering weather reports and forecasts and weather conditions) to—

- (1) Complete the flight to the first airport of intended landing;

(2) Except as provided in paragraph (b) of this section, fly from that airport to the alternate airport; and

(3) Fly after that for 45 minutes at normal cruising speed or, for helicopters, fly after that for 30 minutes at normal cruising speed.

(b) Paragraph (a)(2) of this section does not apply if:

(1) Part 97 of this chapter prescribes a standard instrument approach procedure to, or a special instrument approach procedure has been issued by the Administrator to the operator for, the first airport of intended landing; and

(2) Appropriate weather reports or weather forecasts, or a combination of them, indicate the following:

(i) For aircraft other than helicopters. For at least 1 hour before and for 1 hour after the estimated time of arrival, the ceiling will be at least 2,000 feet above the airport elevation and the visibility will be at least 3 statute miles.

(ii) For helicopters. At the estimated time of arrival and for 1 hour after the estimated time of arrival, the ceiling will be at least 1,000 feet above the airport elevation, or at least 400 feet above the lowest applicable approach minima, whichever is higher, and the visibility will be at least 2 statute miles.

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*§91.175 Takeoff and landing under IFR*

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(f) Civil airport takeoff minimums. This paragraph applies to persons operating an aircraft under part 121, 125, 129, or 135 of this chapter.

(1) Unless otherwise authorized by the FAA, no pilot may takeoff from a civil airport under IFR unless the weather conditions at time of takeoff are at or above the weather minimums for IFR takeoff prescribed for that airport under part 97 of this chapter.

(2) If takeoff weather minimums are not prescribed under part 97 of this chapter for a particular airport, the following weather minimums apply to takeoffs under IFR:

(i) For aircraft, other than helicopters, having two engines or less—1 statute mile visibility.

(ii) For aircraft having more than two engines— 1/2 statute mile visibility.

(iii) For helicopters— 1/2 statute mile visibility.

(3) Except as provided in paragraph (f)(4) of this section, no pilot may takeoff under IFR from a civil airport having published obstacle departure procedures (ODPs) under part 97 of this chapter for the takeoff runway to be used, unless the pilot uses such ODPs or an alternative procedure or route assigned by air traffic control.

(4) Notwithstanding the requirements of paragraph (f)(3) of this section, no pilot may takeoff from an airport under IFR unless:

(i) For part 121 and part 135 operators, the pilot uses a takeoff obstacle clearance or avoidance procedure that ensures compliance with the applicable airplane performance operating limitations requirements under part 121, subpart I or part 135, subpart I for takeoff at that airport; or

(ii) For part 129 operators, the pilot uses a takeoff obstacle clearance or avoidance procedure that ensures compliance with the airplane performance operating limitations prescribed by the State of the operator for takeoff at that airport.

### **(c) Extent of Relief Sought and Reason**

#### Extent of Relief Sought

AWPC proposes the following Conditions and Limitations:

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*§91.9 Civil aircraft flight manual, marking, and placard requirements.*

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(d) Any person taking off or landing a helicopter certificated under part 29 of this chapter at a heliport constructed over water may make such momentary flight as is necessary for takeoff or landing through the prohibited range of the limiting height-speed envelope established for the helicopter if that flight through the prohibited range takes place over water on which a safe ditching can be accomplished and if the helicopter is amphibious or is equipped with floats or other emergency flotation gear adequate to accomplish a safe emergency ditching on open water.

*Proposed Conditions and Limitations: "Any person taking off or landing AW609 at a heliport constructed over water may make such momentary flight as is necessary for takeoff or landing*

*through the prohibited range of the limiting height-speed envelope established for the AW609 if that flight through the prohibited range takes place over water on which a safe ditching can be accomplished and if the AW609 is equipped with floats or other emergency flotation gear adequate to accomplish a safe emergency ditching on open water.”*

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*§91.113 Right-of-way rules: Except water operations.*

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...

(d) Converging. When aircraft of the same category are converging at approximately the same altitude (except head-on, or nearly so), the aircraft to the other's right has the right-of-way. If the aircraft are of different categories—

- (1) A balloon has the right-of-way over any other category of aircraft;
- (2) A glider has the right-of-way over an airship, powered parachute, weight-shift-control aircraft, airplane, or rotorcraft.
- (3) An airship has the right-of-way over a powered parachute, weight-shift-control aircraft, airplane, or rotorcraft.

*Proposed Conditions and Limitations: “A balloon, glider or airship has the right of way over an AW609”*

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*§91.126 Operating on or in the vicinity of an airport in Class G airspace.*

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- (1) Each pilot of an airplane must make all turns of that airplane to the left unless the airport displays approved light signals or visual markings indicating that turns should be made to the right, in which case the pilot must make all turns to the right; and
- (2) Each pilot of a helicopter or a powered parachute must avoid the flow of fixed-wing aircraft.

*Proposed Conditions and Limitations: "When operating in VTOL/Conversion mode in the vicinity of an airport, each pilot of an AW609 shall avoid the flow of fixed-wing aircraft unless otherwise instructed by Air Traffic Control."*

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*§91.129 Operations in Class D airspace.*

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...

(f) Approaches. Except when conducting a circling approach under part 97 of this chapter or unless otherwise required by ATC, each pilot must—

- (1) Circle the airport to the left, if operating an airplane; or
- (2) Avoid the flow of fixed-wing aircraft, if operating a helicopter.

*Proposed Conditions and Limitations: "When operating in VTOL/Conversion mode in the vicinity of an airport, each pilot of an AW609 shall avoid the flow of fixed-wing aircraft unless otherwise instructed by Air Traffic Control."*

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*§91.146 Passenger-carrying flights for the benefit of a charitable, nonprofit, or community event.*

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(b) Passenger carrying flights for the benefit of a charitable, nonprofit, or community event identified in paragraph (c) of this section are not subject to the certification requirements of part 119 or the drug and alcohol testing requirements in part 120 of this chapter, provided the following conditions are satisfied and the limitations in paragraphs (c) and (d) are not exceeded:

- (1) The flight is nonstop and begins and ends at the same airport and is conducted within a 25-statute mile radius of that airport;

- (2) The flight is conducted from a public airport that is adequate for the airplane or helicopter used, or from another location the FAA approves for the operation;
- (3) The airplane or helicopter has a maximum of 30 seats, excluding each crewmember seat, and a maximum payload capacity of 7,500 pounds;
- (5) Each airplane or helicopter holds a standard airworthiness certificate, is airworthy, and is operated in compliance with the applicable requirements of subpart E of this part;
- (6) Each flight is made during day VFR conditions;
- (7) Reimbursement of the operator of the airplane or helicopter is limited to that portion of the passenger payment for the flight that does not exceed the pro rata cost of owning, operating, and maintaining the aircraft for that flight, which may include fuel, oil, airport expenditures, and rental fees;

*Proposed Conditions and Limitations: "When operating an AW609 for compensation, benefit of a charitable, nonprofit, or community event, the aircraft shall be operated consistent with helicopter rules and/or the Aviation Authority-issued operating specifications."*

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*§91.147 Passenger carrying flights for compensation or hire.*

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(a) For the purposes of this section and for drug and alcohol testing, Operator means any person conducting nonstop passenger-carrying flights in an airplane or helicopter for compensation or hire in accordance with §§119.1(e)(2), 135.1(a)(5), or 121.1(d), of this chapter that begin and end at the same airport and are conducted within a 25-statute mile radius of that airport.

*Proposed Conditions and Limitations: "When operating an AW609 for compensation, benefit of a charitable, nonprofit, or community event, the aircraft shall be operated consistent with helicopter rules and/or the Aviation Authority-issued operating specifications."*

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*§91.151 Fuel requirements for flight in VFR conditions.*

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(a) No person may begin a flight in an airplane under VFR conditions unless (considering wind and forecast weather conditions) there is enough fuel to fly to the first point of intended landing and, assuming normal cruising speed—

(1) During the day, to fly after that for at least 30 minutes; or

(2) At night, to fly after that for at least 45 minutes.

(b) No person may begin a flight in a rotorcraft under VFR conditions unless (considering wind and forecast weather conditions) there is enough fuel to fly to the first point of intended landing and, assuming normal cruising speed, to fly after that for at least 20 minutes.

*Proposed Conditions and Limitations: “AW609 shall comply with helicopter IFR, VFR and Special VFR rules for fuel reserves, weather requirements, and obstacle clearance.”*

AWPC requests the following exemptions:

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*§91.167 Fuel requirements for flight in IFR conditions.*

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(a) No person may operate a civil aircraft in IFR conditions unless it carries enough fuel considering weather reports and forecasts and weather conditions) to—

(1) Complete the flight to the first airport of intended landing;

(2) Except as provided in paragraph (b) of this section, fly from that airport to the alternate airport; and

(3) Fly after that for 45 minutes at normal cruising speed or, for helicopters, fly after that for 30 minutes at normal cruising speed.

(b) Paragraph (a)(2) of this section does not apply if:

(1) Part 97 of this chapter prescribes a standard instrument approach procedure to, or a special instrument approach procedure has been issued by the Administrator to the operator for, the first airport of intended landing; and

(2) Appropriate weather reports or weather forecasts, or a combination of them, indicate the following:

(i) For aircraft other than helicopters. For at least 1 hour before and for 1 hour after the estimated time of arrival, the ceiling will be at least 2,000 feet above the airport elevation and the visibility will be at least 3 statute miles.

(ii) For helicopters. At the estimated time of arrival and for 1 hour after the estimated time of arrival, the ceiling will be at least 1,000 feet above the airport elevation, or at least 400 feet above the lowest applicable approach minima, whichever is higher, and the visibility will be at least 2 statute miles.

*AWPC requests exemption from §91.167 civil aircraft IFR fuel reserve requirements, and proposes to meet helicopter IFR fuel reserves.*

*Proposed Conditions and Limitations: "AW609 shall comply with helicopter IFR, VFR and Special VFR rules for fuel reserves, weather requirements, and obstacle clearance.*

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*§91.175 Takeoff and landing under IFR*

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(f) Civil airport takeoff minimums. This paragraph applies to persons operating an aircraft under part 121, 125, 129, or 135 of this chapter.

(1) Unless otherwise authorized by the FAA, no pilot may takeoff from a civil airport under IFR unless the weather conditions at time of takeoff are at or above the weather minimums for IFR takeoff prescribed for that airport under part 97 of this chapter.

(2) If takeoff weather minimums are not prescribed under part 97 of this chapter for a particular airport, the following weather minimums apply to takeoffs under IFR:

(i) For aircraft, other than helicopters, having two engines or less—1 statute mile visibility.

(ii) For aircraft having more than two engines— 1/2 statute mile visibility.

(iii) For helicopters— 1/2 statute mile visibility.

(3) Except as provided in paragraph (f)(4) of this section, no pilot may takeoff under IFR from a civil airport having published obstacle departure procedures (ODPs) under part 97 of this chapter for the takeoff runway to be used, unless the pilot uses such ODPs or an alternative procedure or route assigned by air traffic control.

(4) Notwithstanding the requirements of paragraph (f)(3) of this section, no pilot may takeoff from an airport under IFR unless:

(i) For part 121 and part 135 operators, the pilot uses a takeoff obstacle clearance or avoidance procedure that ensures compliance with the applicable airplane performance operating limitations requirements under part 121, subpart I or part 135, subpart I for takeoff at that airport; or

(ii) For part 129 operators, the pilot uses a takeoff obstacle clearance or avoidance procedure that ensures compliance with the airplane performance operating limitations prescribed by the State of the operator for takeoff at that airport.

*AWPC requests exemption from §91.175 IFR weather requirements, and proposes to meet helicopter IFR weather requirements.*

*Proposed Conditions and Limitations: "AW609 shall comply with helicopter IFR, VFR and Special VFR rules for fuel reserves, weather requirements, and obstacle clearance.*

Reason

14 CFR Part 91 General Operating and Flight Rules were not developed to be inclusive of tiltrotor aircraft. The lack of regulation poses a flight safety risk that must be addressed to foster consistent application of operational regulations.

**(d) Public Interest**

Funded by public dollars, the United States' Department of Defense initiated development of the first tiltrotors in the 1960's and remains the global leader in the development of this technology. The AW609 builds upon the success of the Bell-Boeing V-22 Osprey, the groundbreaking powered-lift aircraft now in service with three of the armed services of the United States. In 1997, when the fielding of the V-22 seemed imminent, the FAA published regulations covering the certification of powered-lift pilots. The FAA published rules for fractional ownership of Powered Lift aircraft under Part 91, but Part 91 remains undeveloped for many safety-critical aspects of Powered-lift flight operations. The AW609 program petitioned the FAA to mitigate these rules in 2017, but this request was denied.

Without consistent application of operational regulations, we jeopardize the United States' strategic advantage in fielding new and novel aircraft technologies. The International Civil Aviation Organization, with FAA participation, published Doc 10103 "Guidance for Tilt-rotors" in 2019. This document serves as an internationally accepted basis for crafting tiltrotor operational rules. As the American public funded (and continues to fund) the groundbreaking work now leading to breakthroughs in vertical flight, they deserve regulations that promote safety conscious innovation.

In addition to the arguments made above, the AW609's unique capabilities will allow operators of the aircraft to provide drastically improved services to the public compared to legacy helicopters. The AW609's speed and range will permit air ambulance services to be available to more of the public, particularly in rural areas. The AW609 enhances access to care and improved patient outcomes due to the ability to get patients to a higher level of care more rapidly.

**(e) Reasons Why Granting the Exemption Would Not Adversely Affect Safety**

In an effort to improve safety, the Petitioner is proposing to apply conditions and limitations where no regulations currently apply:

§91.9 Civil aircraft flight manual, marking, and placard requirements.

- The AW609 performs take-off and landing in VTOL configuration. Departure/approach operations over water should be conducted IAW helicopter procedures and safety equipment.

§91.113 Right-of-way rules: Except water operations.

- The AW609's maneuverability is similar to rotorcraft. Therefore it should yield the right of way to balloons, gliders or airships.

§91.126 Operating on or in the vicinity of an airport in Class G airspace.

- The AW609 performs take-off and landing in VTOL configuration. Operations in the vicinity of an airport should be consistent with helicopter procedures.

§91.129 Operations in Class D airspace.

- The AW609 performs take-off and landing in VTOL configuration. Operations in the vicinity of an airport should be consistent with helicopter procedures, unless directed by or coordinated with ATC.

§91.146 Passenger-carrying flights for the benefit of a charitable, nonprofit, or community event.

- The AW609 shares characteristics of both airplane and helicopter, depending on the mode of flight. AW609 should be subject to the same regulations when performing flight in support of charitable, nonprofit or community events.

§91.147 Passenger carrying flights for compensation or hire.

- The AW609 shares characteristics of both airplane and helicopter, depending on the mode of flight. Operators should comply with the same regulations when carrying passengers for compensation or hire.

§91.151 Fuel requirements for flight in VFR conditions.

- The AW609 performs take-off and landing in VTOL configuration. The aircraft meets or exceeds the low-speed controllability requirements of helicopters. AW609 possesses the ability to land safely in the same locations as helicopters prior to exhausting fuel, while maintaining the superior fuel efficiency of wing-borne lift.<sup>6</sup> Therefore the AW609 can be

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<sup>6</sup> A comparably sized helicopter's best range speed is approximately 125 knots, while AW609's best range speed at 5000' MSL is approximately 200 knots. The AW609 would have 60% greater range than a helicopter with same fuel reserve.

regulated as a helicopter and observe a 20-minute VFR fuel reserve with an equivalent level of safety.

§91.167 Fuel requirements for flight in IFR conditions.

- The AW609 performs take-off and landing in VTOL configuration, and it meets or exceeds the low-speed controllability requirements of helicopters. The lower departure and approach speed in VTOL mode gives the pilot the same time to recognize the IFR landing environment as helicopters in reduced visibility environments, also without the risk of wing stall. Moreover, the superior fuel efficiency of wing-borne lift allows the aircraft to fly farther than a comparably sized helicopter. This proposal builds upon three decades of military tilt-rotor operations<sup>7</sup> (over 600,000 flight hours) where V-22 aircraft have been operated under identical regulations to what is proposed. Therefore the AW609 can be regulated as a helicopter and observe helicopter weather minima (§91.167(c)(2)(ii)) when planning for an alternate, and thereafter carry a 30-minute IFR fuel reserve §91.167(a)(3) with an equivalent level of safety.

§91.175 Takeoff and landing under IFR

- The AW609 performs take-off and landing in VTOL configuration, and it meets the low-speed controllability requirements of helicopters. The lower departure and approach speed in VTOL mode gives the pilot the same time to recognize the IFR landing environment as helicopters in reduced visibility environments, also without the risk of wing stall. This proposal builds upon three decades of military tilt-rotor operations (over 600,000 flight hours) where V-22 aircraft have been operated under identical regulations to what is proposed. Therefore AW609 can observe and apply helicopter weather and obstacle clearance minima with an equivalent level of safety.

The AW609 is a powered-lift aircraft, designed as a tiltrotor. The design, control laws and human machine interface (HMI) are consistent with traditional helicopters. The aircraft meets handling quality stability and control standards for airplanes and helicopters. The AW609 is type certificated for two pilots for all flight operations, providing redundancy and the ability to leverage diverse operational experiences to enhance safety.

The Conditions and Limitations proposed in this petition are consistent with ICAO Doc 10103 “Guidance for Tilt-rotors”, which states that “[w]hile sharing aeroplane characteristics, tilt-rotors are most closely aligned with helicopters due to their ability to sustain flight at low speed, as well as to take-off and land vertically. Therefore, helicopter SARPs should be used as the basis for tilt-rotor operations. Where deviation is required from helicopter SARPs to cover

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<sup>7</sup> See OPNAVINST 3710.7 “NATOPS GENERAL FLIGHT AND OPERATING INSTRUCTIONS”, Sections 5.2 thru 5.4.

other aspects of flight, this manual provides guidance and reference to relevant aeroplane SARPs.”

**(f) Public Summary for Federal Register**

AWPC requests imposition of Conditions and Limitations consistent with ICAO Doc 10103 “Guidance for Tilt-rotors”. The AW609 is a multi-capable aircraft that can provide, utility, VIP, Search & Air Rescue and air ambulance flight operations. This request is to support and facilitate AW609 flight operations in the National Airspace System.

**(g) Additional information**

AWPC anticipates that the AW609 will serve in SAR, EMS and para-public roles.

*Tiltrotor Air Ambulance*

The AW609 tiltrotor was specifically designed to meet the Air Ambulance requirements. Air Ambulance is an essential public service and the expectation of available medical services includes air ambulance transport. Medical advances have led to the "golden hour" for patient access to trauma centers that enable a higher survival expectation. Rural health care availability has declined due to cost and a commensurate consolidation of emergency capability at trauma centers. That access to trauma centers is directly tied to availability of high-speed transportation.

The AW609 will be certified with IFR capabilities including approaches (WAAS-GPS) to hospital heliports and pre-arranged rural patient transfer sights without any ground-based navigation aids. The benefit to the public is higher availability of service in adverse weather conditions below VFR weather minima and icing conditions. The public also benefits in that rural transport that would normally be by ground ambulance is now more accessible and expedited with the use of pre-arranged patient transfer points. With recent requirements and innovation in patient care, tiltrotors in this mission will now carry more medical equipment (such as heart-pumps, neo-natal units, and automatic CPR equipment) that significantly improve patient survivability in the "golden hour" of transport but which adds significant weight to the aircraft limiting range. However, the higher speed of a tiltrotor increases range and radius of action.

The Conditions and Limitations would allow the AW609 to perform this role with a uniform application of operational rules, thereby better serving the American public, adding increased levels of safety and improving patient survivability.

*Search and Rescue Operations*

Beyond the *Air Ambulance* role identified above, the AW609 can be equipped with a hoist to perform search and rescue missions. With its speed and range, the AW609 can be in the search area and perform the search in airplane mode at low altitude. Once the survivors are located, it can convert and execute the rescue portion of the mission. This has potential to dramatically reduce the time from a distress call to receiving care.

The Conditions and Limitations would allow the AW609 to perform this role thereby better serving the American public, adding increased levels of safety and improving patient survivability.

**(h) Operations Outside the United States**

N/A

**Conclusion:**

AWPC believes that imposing the Conditions and Limitations contained in this Petition for areas where Part 91 is silent with respect to Powered Lift operations will foster an environment of uniform regulation of the AW609 until Powered Lift operational rules are codified.

Furthermore, the AW609's tilt-rotor configuration gives it the low speed maneuverability of a helicopter, so the aircraft's IFR fuel and weather minima should be based on helicopter rules.